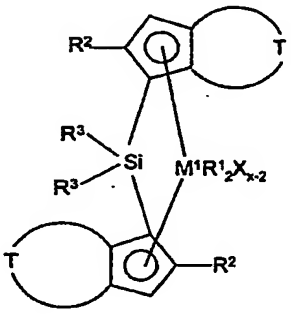
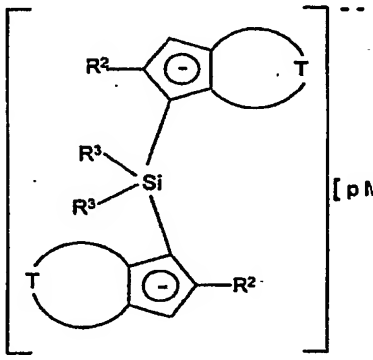
We claim:

1. A process for the racemoselective preparation of silicon-bridged dialkyl-ansa-metallocenes of the formula (I)



(I)

which comprises reacting a ligand starting compound of the formula (II)



(II)

with a transition metal dialkyl compound of the formula (III)

$$M^1X_xR^1{}_2{}^*D_y \qquad (III),$$

where

M^1 is an element of group 4, 5 or 6 of the Periodic Table of the Elements,

R^1 are identical C_1-C_{20}-alkyl or C_7-C_{40}-arylalkyl radicals,

X are identical or different halogens,

R^2 are identical or different C_1-C_{40} radicals,

R^3 are identical or different C_1-C_{40} radicals,

T is a divalent C_1-C_{40} group which together with the cyclopentadienyl ring forms a further saturated or unsaturated ring system which has a ring size of from 5 to 12 atoms, where T may contain the heteroatoms Si, Ge, N, P, O or S in the ring system fused onto the cyclopentadienyl ring,

M^2 is Li, Na, K, MgCl, MgBr, MgI, Mg or Ca,

D is an uncharged Lewis base ligand,

x is equal to the oxidation number of M^1 minus 2,

y is from 0 to 2

and

p is 1 in the case of doubly positively charged metal ions or 2 in the case of singly positively charged metal ions or metal ion fragments,

wherein the racemoselectivity = (proportion of rac – proportion of meso)/(proportion of rac + proportion of meso) is greater than zero.

2. A process as claimed in claim 1, wherein

T is a 1,3-butadiene-1,4-diyl group which may be unsubstituted or be substituted by from 1 to 4 radicals R^4, where the two 1,3-butadiene-1,4-diyl groups may be different,

R^4 are identical or different C_1-C_{20} radicals,

M^1 is titanium, zirconium or hafnium,

R^1 are identical C_1-C_5-alkyl or C_7-C_{20}-arylalkyl radicals,

X is halogen and

R^2, R^3, M^2, D, p, x and y are as defined in claim 1.

3. A process as claimed in claim 1 or 2, wherein the transition metal dialkyl compound of the formula (III) is produced at above –30°C by combining a compound M^1X_{x+2} with from 2 to 2.5 equivalents of a compound R^1M^3 in the presence of a ligand compound D, where

M^3 is Li^+, Na^+, K^+, $MgCl^+$, $MgBr^+$, MgI^+, ½ [Mg^{++}] or ½ [Zn^{++}], and

the other variables are as defined in claim 1 or 2.

4. A process as claimed in claim 1 or 2, wherein the ligand starting compound of the formula (II) or (V) is combined with the transition metal dialkyl compound of the formula (III) at above –30°C.

5. A process as claimed in claim 4, wherein the reaction mixture is maintained at from 30°C to 150°C for a period of at least 10 minutes after the reaction components have been combined.

6. A process as claimed in any of claims 1 to 5, wherein the reaction is carried out in an organic solvent or solvent mixture which comprises at least 10% by volume of an ether.

7. The use of a transition metal dialkyl compound of the formula (III) for the racemoselective preparation of silicon-bridged dialkyl-ansa-metallocenes of the formula (I).